

# Qualification for the DRC Finals

Release 2 on November 19, 2014. DISTAR Case 23894

## [Revision History](#)

### [1 Introduction](#)

### [2 Qualification Rules](#)

### [3 Qualification Schedule](#)

### [4 Qualification Tasks](#)

## Revision History

This section captures changes to this document.

Version	Date	Section	Description
Release 1	6/24/2014	Document	Created
Release 2	11/19/2014	Schedule	Encourage early submission
		Tasks	If possible, get up from multiple prone positions

# 1 Introduction

This document defines the requirements, rules, and procedures for the DRC Finals Qualification process.

## 2 Qualification Rules

This section describes the rules governing the Qualification process. Teams must demonstrate that they can perform all Qualification tasks in order to be invited to participate in the DRC Finals. Demonstrations will consist of videos that show the tasks being attempted.

For Qualification Tasks 2-5, pairs of videos must be simultaneously recorded. One video in each pair will show the robot in action. The other video will show the operator(s) and their computer screens.

Post all videos to YouTube with the privacy setting “Unlisted.” Send DARPA the URL at the email address [TheRoboticsChallenge@darpa.mil](mailto:TheRoboticsChallenge@darpa.mil) . Do **NOT** set the YouTube privacy setting to “Private.”

Test apparatus must be provided by each participant at their own site, and must conform to the specifications in this document.

Teams are encouraged to practice the tasks described below, adhering to the time limits. If a team realizes that it will be unable to pass the qualification tasks, it may resign from the competition without prejudice for participating in any future DARPA events.

At its discretion, DARPA may choose to have a follow-up visit to a team’s site. Teams should be prepared for possible visits, if needed, from the time of their video submission through February 27, 2015.

DARPA does not expect to do so, but if necessary, DARPA may use task completion and task completion time performance displayed in the Qualification videos and site visits as a means of limiting the number of teams competing at the Finals to fit within available resources.

## 3 Qualification Schedule

Please refer to the Rules of the DRC Finals document, posted on the FAQ page of [TheRoboticsChallenge.org](http://TheRoboticsChallenge.org).

DARPA encourages teams to submit their qualification materials as soon as possible. This benefits teams by providing more time to plan events well-suited to team capabilities.

## 4 Qualification Tasks

To qualify, teams must demonstrate their robot system performing the following five tasks:

1. Demonstrate a wired or wireless on-robot Emergency-stop capability. An on-robot Emergency-stop button must be present and demonstrated to work. DARPA will provide a wireless Emergency-stop for the Finals to augment the on-robot Emergency-stop. The robot must emergency-stop if either the on-robot or wireless stops are activated.

2. Get up from a prone position. A prone position is defined as one in which the center of mass of the robot is as low as practically feasible. Getting up is defined as raising the center of mass of the robot to as high as practically feasible. The robot will qualify if it gets up from flat ground, but should expect to have to get up from rough terrain at the Finals.

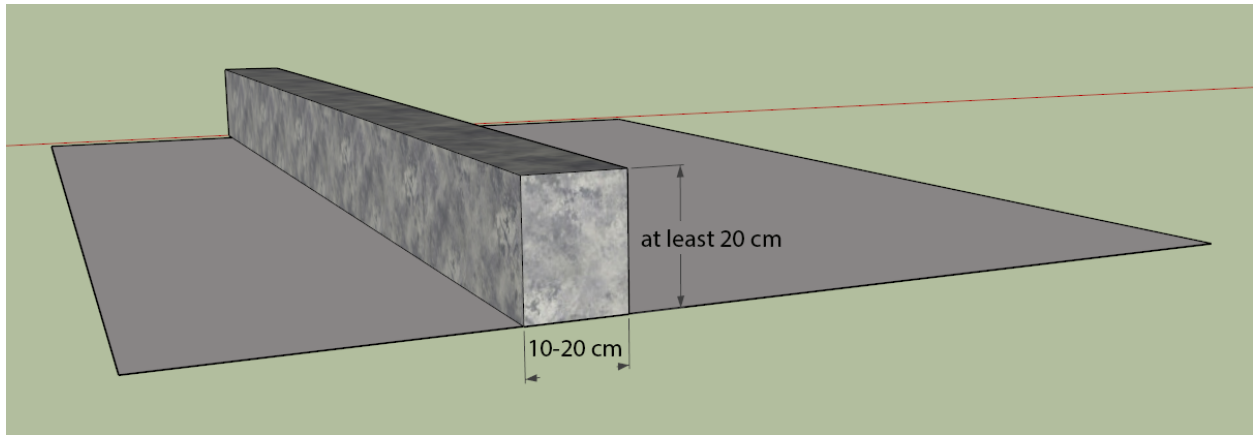
If possible, DARPA encourages teams to get up from multiple different prone positions, for example, from lying on the robot front, the robot side, and the robot back.

3. Locomote a distance of at least 10 meters over flat ground in no more than five minutes without falling.

4. Traverse a barrier wall with a rectangular cross section that is at least 20 cm high, and between 10 cm and 20 cm wide. See Figure 1. This task must be completed in no more than five minutes.

5. Rotate a circular valve handle of any size 360 degrees. The robot must approach the handle from a distance of at least 2 meters and rotate the valve handle at least 360 degrees counter-clockwise. See Figure 2. This task must be completed in no more than five minutes.

For all of these qualification tasks, the robot may **not** use a safety belay. Note that the maximum times given above are very long. Teams are encouraged to qualify with the fastest achievable performance. Robots moving slowly will likely not be competitive at the Finals, and if space is limited DARPA may need to exclude from the Finals robots that qualify with slow performance (as noted in “Qualification Rules” above).



*Figure 1. Schematic of the barrier for Qualification Task 4*



*Figure 2. A circular valve handle is mounted on a free-standing panel*